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CLAIMS

1. A rotating electric machine comprising:

a plurality of ventilating passages formed between a stator frame and a stator iron core;

a cooler provided at least in one, communicated to a central portion in the axial direction of said stator iron core, of said plurality of ventilating passages;

a booster for boosting a coolant; and

a ventilating circuit in which the coolant boosted by said booster, being cooled by said cooler, and is allowed to flow to said central portion in the axial direction of said stator iron core in the direction from the outer peripheral side to the inner peripheral side of said stator iron core via said ventilating passage communicated to said central portion in the axial direction of said stator iron core.

2. A rotating electric machine comprising:

a plurality of ventilating passages formed between a stator frame and a stator iron core;

coolers provided in said plurality of said ventilating passages;

a booster for boosting a coolant; and

a ventilating circuit in which part or all of the coolant cooled by one of said coolers and boosted by said booster is further cooled by another of said coolers, and

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is allowed to flow to a central portion in the axial direction of said stator iron core in the direction from the outer peripheral side to the inner peripheral side of said stator iron core at least via one, communicated to said central portion in the axial direction of said stator iron core, of said plurality of ventilating passages.

3. A rotating electric machine comprising:

a plurality of ventilating passages formed between a stator frame and a stator iron core;

coolers provided in said plurality of ventilating passages;

a fan for boosting a coolant;

a first ventilating circuit in which the coolant boosted by said fan is introduced from the inner peripheral side of said stator iron core into some of said ventilating passages and is cooled by some of said coolers; and

a second ventilating circuit in which the coolant boosted by said fan is cooled by some of said coolers and is allowed to flow to said stator iron core in the direction from the outer peripheral side to the inner peripheral side of said stator iron core via some of said ventilating passages;

wherein at least one, communicated to a central portion in the axial direction of said stator iron core, of said plurality of ventilating passages constitutes part of

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said second ventilating circuit.

4. A rotating electric machine comprising:

a plurality of ventilating passages formed between a stator frame and a stator iron core;

coolers provided in said plurality of ventilating passages;

a fan for boosting the coolant;

a first ventilating circuit in which the coolant boosted by said fan is introduced from the inner peripheral side of said stator iron core to some of said ventilating passages and is cooled by some of said coolers; and

a second ventilating circuit in which the coolant boosted by said fan and branched from said first ventilating circuit is cooled by some of said coolers, and is allowed to flow to said stator iron core in the direction from the outer peripheral side to the inner peripheral side of said stator iron core;

wherein at least one, communicated to a central portion in the axial direction of said stator iron core, of said plurality of ventilating passages constitutes part of said second ventilating circuit.

5. A rotating electric machine in which the inside of said machine is cooled by a coolant enclosed therein, comprising:

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a plurality of ventilating passages formed between a stator frame and a stator iron core;

coolers provided in said plurality of ventilating passages;

a fan for boosting a coolant;

a first ventilating circuit in which the coolant boosted by said fan is introduced from the inner peripheral side of said stator iron core into some of said ventilating passages and is cooled by some of said coolers; and

a second ventilating circuit in which the coolant boosted by said fan is cooled by some of said coolers and is allowed to flow to said stator iron core in the direction from the outer peripheral side to the inner peripheral side of said stator iron core via some of said ventilating passages;

wherein at least one, communicated to a central portion in the axial direction of said stator iron core, of said plurality of ventilating passages constitutes part of said second ventilating circuit.

6. A rotating electric machine in which the inside of said machine is cooled by atmospheric air sucked from outside said machine, comprising:

a plurality of ventilating passages formed between a stator frame and a stator iron core;

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a fan for boosting a coolant;

a first ventilating circuit in which the atmospheric air boosted by said fan is introduced from the inner peripheral side of said stator iron core into some of said ventilating passages; and

a second ventilating circuit in which the atmospheric air boosted by said fan is allowed to flow to said stator iron core in the direction from the outer peripheral side to the inner peripheral side of said stator iron core via some of said ventilating passages;

wherein a cooler is provided at least in one, which constitutes part of said second ventilating circuit and which is communicated to a central portion in the axial direction of said stator iron core, of said plurality of ventilating passages.

7. A rotating electric machine in which the inside of said machine is cooled by atmospheric air sucked from outside said machine, comprising:

a plurality of ventilating passages formed between a stator frame and a stator iron core;

a fan for boosting a coolant;

a first ventilating circuit in which the atmospheric air boosted by said fan is introduced from the inner peripheral side of said stator iron core into some of said ventilating passages; and

a second ventilating circuit in which the atmospheric air boosted by said fan is allowed to flow to said stator iron core in the direction from the outer peripheral side to the inner peripheral side of said stator iron core via some of said ventilating passages;

wherein a cooler is provided at least on the way of a ventilating passage for communicating an atmospheric air suction hole to one, which constitutes part of said second ventilating circuit and which is communicated to a central portion in the axial direction of said stator iron core, of said plurality of ventilating passages.

8. A rotating electric machine according to any one of claims 1 to 7, wherein said coolers are provided in an upper or lower portion of said rotating electric machine.

9. A rotating electric machine comprising:

a plurality of ventilating passages formed between a stator frame and a stator iron core;

coolers provided in said plurality of ventilating passages;

a fan for boosting a coolant;

a first ventilating circuit in which the coolant boosted by said fan is introduced from the inner peripheral side of said stator iron core into some of said ventilating passages and is cooled by some of said coolers; and

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a second ventilating circuit in which the coolant boosted by said fan is cooled by some of said coolers and is allowed to flow to said stator iron core in the direction from the outer peripheral side to the inner peripheral side of said stator iron core via some of said ventilating passages;

wherein at least one, communicated to a central portion in the axial direction of said stator iron core, of said plurality of ventilating passages constitutes part of said second ventilating circuit; and

said coolers provided in said first ventilating circuit and said coolers in said second ventilating circuit are opposed to each other with a rotating shaft put therebetween.

10. A rotating electric machine according to any one of claims 1 to 9, wherein said stator iron core has a plurality of ventilating ducts which continuously extend in the radial direction and which are arranged in the axial direction; and

axial intervals of those, positioned at said central portion in the axial direction of said stator iron core, of said ventilating ducts are smaller than axial intervals of those, positioned at the other portion of said stator iron core, of said ventilating ducts.

11. A rotating electric machine according to any one of claims 3 to 9, wherein said stator iron core has a plurality of ventilating ducts which continuously extend in the radial direction and which are arranged in the axial direction; and

axial intervals between those, constituting part of said second ventilating circuit, of said ventilating ducts are smaller than axial intervals between those, constituting part of said second ventilating circuit, of said ventilating ducts.

12. A method of cooling a rotating electric machine, comprising the steps of:

introducing a boosted coolant on the outer peripheral side of a stator iron core;

cooling the coolant thus introduced; and

allowing the coolant thus cooled to flow at least to a central portion in the axial direction of the stator iron core in the direction from the outer peripheral side to the inner peripheral side of the stator iron core.